

Search History

STN  
(HCAPLUS, INSPEC, JAPIO, USPATFULL, USPAT2, INPADOC)  
6/5/2005

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(FILE 'HOME' ENTERED AT 15:18:55 ON 05 JUN 2007)

FILE 'HCAPLUS, INSPEC, JAPIO, USPATFULL, USPAT2, INPADOC' ENTERED AT 15:19:17 ON 05 JUN 2007

L1 17937 S (CZ OR CZOCHARALSKI)  
L2 565245 S (MONO OR SINGLE) (8A) (CRYSTAL#)  
L3 16929 S (N(W)REGION#)  
L4 3440 S (OSF OR OXIDATION(W) INDUCED(W) STACKING(W) FAULT)  
L5 122049 S (RING(W)SHAPE#)  
L6 4509 S (GAS(W)FLOW(W)RING# OR GAS(W)FLOW) (8A) (CYLINDER# OR BAFFLE#)  
L7 12076 S (200(W)MM) (8A) (DIAMETER#)

=> s 11 and 12 and 13 and 14 and 15 and 16 and 17

L8 10 L1 AND L2 AND L3 AND L4 AND L5 AND L6 AND L7

=> d 18 1-10 abs,bib

L8 ANSWER 1 OF 10 USPATFULL on STN

AB The present invention is a method for producing a single crystal with pulling the single crystal from a raw material melt in a chamber by CZ method, wherein when growing the single crystal, where a pulling rate is defined as V and a temperature gradient of the crystal is defined as G during growing the single crystal, the temperature gradient G of the crystal is controlled by changing at least two or more of pulling conditions including a diameter of the straight body of the single crystal, a rotation rate of the single crystal during pulling the single crystal, a flow rate of an inert-gas introduced into the chamber, a position of a heater heating the raw material melt and a distance between the melt surface of the raw material melt and a heat insulating member provided in the chamber so as to oppose to the surface of the raw material melt, thereby V/G which is a ratio of the pulling rate V and the temperature gradient G of the crystal is controlled so that a single crystal including a desired defect region is grown. Thereby, there is provided a method for producing a single crystal in which when the single crystal is grown by CZ method, V/G can be controlled without lowering a pulling rate V, and thus the single crystal including a desired defect region can be produced effectively for a short time.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2007:20399 USPATFULL  
TI Process for producing single crystal and single crystal  
IN Sakurada, Masahiro, Fukushima, JAPAN  
Iida, Makoto, Fukushima, JAPAN  
Mitamura, Nobuaki, Fukushima, JAPAN  
Ozaki, Atsushi, Fukushima, JAPAN  
PA Shin-Etsu Handotai Co., Ltd., Tokyo, JAPAN, 1000005 (non-U.S. corporation)  
PI US 2007017433 A1 20070125  
AI US 2004-560581 A1 20040528 (10)  
WO 2004-JP7350 20040528  
20060202 PCT 371 date  
PRAI JP 2003-185773 20030627  
DT Utility  
FS APPLICATION  
LREP OLIFF & BERRIDGE, PLC, P.O. BOX 19928, ALEXANDRIA, VA, 22320, US  
CLMN Number of Claims: 21  
ECL Exemplary Claim: 1

DRWN 5 Drawing Page(s)

LN.CNT 1030

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L8 ANSWER 2 OF 10 USPATFULL on STN

AB The present invention provides a method for producing a single crystal by pulling a single crystal from a raw material melt in a chamber in accordance with Czochralski method, comprising pulling a single crystal having a defect-free region which is outside an OSF region to occur in a ring shape in the radial direction and which interstitial-type and vacancy-type defects do not exist in, wherein the pulling of the single crystal is performed with being controlled so that an average of cooling rate in passing through a temperature region of the melt point of the single crystal to 950° C. is in the range of 0.96° C./min or more and so that an average of cooling rate in passing through a temperature region of 1150° C. to 1080° C. is in the range of 0.88° C./min or more and so that an average of cooling rate in passing through a temperature region of 1050° C. to 950° C. is in the range of 0.71° C./min or more. Thereby, production margin in pulling a single crystal having a defect-free region can be considerably enlarged and therefore there can be provided a method for producing a single crystal by which production yield and productivity of the crystal having the defect-free region can be considerably improved.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2006:318540 USPATFULL

TI Method for producing a single crystal

IN Hoshi, Ryoji, Fukushima, JAPAN

Sonokawa, Susumu, Fukushima, JAPAN

PA Shin-Etsu Handotai Co., Ltd., Chiyoda-ku, JAPAN (non-U.S. corporation)

PI US 2006272570 A1 20061207

AI US 2004-573822 A1 20041019 (10)

WO 2004-JP15395 20041019

20060328 PCT 371 date

PRAI JP 2003-369855 20031030

DT Utility

FS APPLICATION

LREP OLIFF & BERRIDGE, PLC, P.O. BOX 19928, ALEXANDRIA, VA, 22320, US

CLMN Number of Claims: 17

ECL Exemplary Claim: 1-7

DRWN 6 Drawing Page(s)

LN.CNT 751

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L8 ANSWER 3 OF 10 USPATFULL on STN

AB The present invention is a method for producing a single crystal in accordance with Czochralski method by flowing an inert gas downward in a chamber 1 of a single crystal -pulling apparatus 11 and surrounding a single crystal 3 pulled from a raw material melt 2 with a gas flow -guide cylinder 4, wherein when a single crystal within N region outside OSF region generated a ring shape in the radial direction of the single crystal is pulled, the single crystal within N region is pulled in a condition that flow amount of the inert gas between the single crystal and the gas flow -guide cylinder is 0.6 D(L/min) or more and pressure in the chamber is 0.6 D(hPa) or less, in which D (mm) is a diameter of the single crystal to be pulled. It is preferable that there is used the gas flow-guide cylinder

*\* Applicants' Invention*

that Fe concentration is 0.05 ppm or less, at least, in a surface thereof. Thereby, there is provided a method for producing a single crystal, wherein in the case that a single crystal is produced by an apparatus having a gas flow-guide cylinder in accordance with CZ method, the single crystal has low defect density and Fe concentration can be suppressed to be  $1 \times 10^{10}$  atoms/cm<sup>3</sup> or less even in a peripheral part thereof.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2006:277991 USPATFULL  
TI Process for producing single crystal and silicon crystal wafer  
IN Fusegawa, Izumi, Fukushima, JAPAN  
Mitamura, Nobuaki, Fukushima, JAPAN  
Yanagimachi, Takahiro, Fukushima, JAPAN  
PA Shin-Etsu Handotai Co., Ltd., Chiyoda-ku, JAPAN (non-U.S. corporation)  
PI US 2006236919 A1 20061026  
AI US 2004-568186 A1 20040813 (10)  
WO 2004-JP11685 20040813  
20060303 PCT 371 date  
PRAI JP 2003-296837 20030820  
DT Utility  
FS APPLICATION  
LREP OLIFF & BERRIDGE, PLC, P.O. BOX 19928, ALEXANDRIA, VA, 22320, US  
CLMN Number of Claims: 18  
ECL Exemplary Claim: 1-6  
DRWN 5 Drawing Page(s)  
LN.CNT 631

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L8 ANSWER 4 OF 10 USPATFULL on STN

AB The present invention is a method for producing a single crystal of which a whole plane in a radial direction is a defect-free region with pulling the single crystal from a raw material melt in a chamber by Czochralski method, wherein a pulling condition is changed in a direction of the crystal growth axis during pulling the single crystal so that a margin of a pulling rate is always a predetermined value or more that the single crystal of which the whole plane in a radial direction is a defect-free region can be pulled. Thereby, there can be provided a method for producing a single crystal in which when a single crystal is produced by CZ method, the single crystal of which a whole plane in a radial direction is a defect-free region entirely in a direction of the crystal growth axis can be produced with stability.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2006:205843 USPATFULL  
TI Method for producing single crystal and single crystal  
IN Mitamura, Nobuaki, Fukushima, JAPAN  
Ohta, Tomohiko, Gunma, JAPAN  
Fusegawa, Izumi, Fukushima, JAPAN  
Sakurada, Masahiro, Fukushima, JAPAN  
Ozaki, Atsushi, Fukushima, JAPAN  
PA SHIN-ETSU HANDOTAI CO., LTD., Tokyo, JAPAN (non-U.S. corporation)  
PI US 2006174819 A1 20060810  
US 7226507 B2 20070605  
AI US 2004-561865 A1 20040527 (10)  
WO 2004-JP7252 20040527  
20060220 PCT 371 date  
PRAI JP 2003-184838 20030627

DT Utility  
FS APPLICATION  
LREP OLIFF & BERRIDGE, PLC, P.O. BOX 19928 / ALEXANDRIA, VA, 22320, US  
CLMN Number of Claims: 21  
ECL Exemplary Claim: 1-11  
DRWN 9 Drawing Page(s)  
LN.CNT 1041  
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L8 ANSWER 5 OF 10 USPATFULL on STN

AB The present invention is a method for producing a single crystal with pulling the single crystal from a raw material melt by CZ method, wherein when growing the single crystal, where a pulling rate is defined as  $V$ , a temperature gradient of the crystal at a central portion of the crystal is defined as  $G_c$ , and a temperature gradient of the crystal at a peripheral portion of the crystal is defined as  $G_e$ , the temperature gradient  $G_c$  at the central portion of the crystal and the temperature gradient  $G_e$  at the peripheral portion of the crystal are controlled by changing a distance between the melt surface of the raw material melt and a heat insulating member provided so as to oppose to the surface of the raw material melt, thereby difference  $\Delta G$  between the temperature gradient  $G_c$  at the central portion of the crystal and the temperature gradient  $G_e$  at the peripheral portion of the crystal is  $0.5^\circ \text{C./mm}$  or less, and also  $V/G_c$  which is a ratio of the pulling rate  $V$  and the temperature gradient  $G_c$  at the central portion of the crystal is controlled so that a single crystal including a desired defect region can be grown. Thereby, there is provided a method for producing a single crystal in which when the single crystal is grown by CZ method,  $V/G$  can be controlled without lowering the pulling rate  $V$ , and thus the single crystal including a desired defect region over a whole plane in the radial direction entirely in the direction of the crystal growth axis can be produced effectively for a short time and at high yield.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2006:155224 USPATFULL  
TI Process for producing single crystal and single crystal  
IN Sakurada, Masahiro, Fukushima, JAPAN  
PI US 2006130740 A1 20060622  
AI US 2004-561205 A1 20040528 (10)  
WO 2004-JP7349 20040528  
20060203 PCT 371 date  
PRAI JP 2003-185960 20030627  
DT Utility  
FS APPLICATION  
LREP OLIFF & BERRIDGE, PLC, P.O. BOX 19928, ALEXANDRIA, VA, 22320, US  
CLMN Number of Claims: 49  
ECL Exemplary Claim: 1-9  
DRWN 5 Drawing Page(s)  
LN.CNT 1249  
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L8 ANSWER 6 OF 10 USPATFULL on STN

AB There are disclosed a silicon wafer for epitaxial growth wherein the wafer is produced by slicing a silicon single crystal grown with doping nitrogen according to the Czochralski method (CZ method) in the region where at least the center of the wafer becomes  $V$  region in which the void type defects are generated, and wherein the number of defects having an opening size of 20 nm or less among the void type defects appearing on the surface of the wafer is  $0.02/\text{cm}^2$  or less, and an epitaxial wafer wherein an epitaxial layer

is formed on the silicon wafer for epitaxial growth. Thereby, there can be produced an epitaxial wafer having a high gettering capability wherein very few SF exist in the epitaxial layer easily at high productivity and at low cost.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2005:243977 USPATFULL  
TI Silicon wafer for epitaxial growth, epitaxial wafer, and its manufacturing method  
IN Hoshi, Ryoji, Fukushima, JAPAN  
Sonokawa, Susumu, Fukushima, JAPAN  
PA Shin-Etsu Handotai Co., Ltd., Tokyo, JAPAN (non-U.S. corporation)  
PI US 2005211158 A1 20050929  
US 7204881 B2 20070417  
AI US 2003-520099 A1 20030708 (10)  
WO 2003-JP8671 20030708  
20050104 PCT 371 date  
PRAI JP 2002-204703 20020712  
DT Utility  
FS APPLICATION  
LREP OLIFF & BERRIDGE, PLC, P.O. BOX 19928, ALEXANDRIA, VA, 22320, US  
CLMN Number of Claims: 30  
ECL Exemplary Claim: 1-11  
DRWN 6 Drawing Page(s)  
LN.CNT 849

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L8 ANSWER 7 OF 10 USPATFULL on STN

AB The present invention provides a silicon wafer sliced from a silicon single crystal ingot grown by the Czochralski method under such conditions that V-rich region should become dominant, wherein count number of particles having a size of 0.1  $\mu$ m or more is 1 count/cm.sup.2 or less when particles are counted by using a particle counter and a method for producing a silicon single crystal. Thus, there is provided a production technique that can improve productivity and reduce cost for high quality silicon wafers of excellent device characteristics by further reducing density and size of defects such as COP.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2002:284777 USPATFULL  
TI Silicon wafer and method for producing silicon single crystal  
IN Hoshi, Ryoji, Fukushima, JAPAN  
Fusegawa, Izumi, Fukushima, JAPAN  
Ohta, Tomohiko, Fukushima, JAPAN  
Maeda, Shigemaru, Fukushima, JAPAN  
PI US 2002157598 A1 20021031  
US 6632411 B2 20031014  
AI US 2001-979519 A1 20011123 (9)  
WO 2001-JP2451 20010327  
PRAI JP 2000-92337 20000329  
DT Utility  
FS APPLICATION  
LREP Oliff & Berridge, PO Box 19928, Alexandria, VA, 22320  
CLMN Number of Claims: 9  
ECL Exemplary Claim: 1  
DRWN 4 Drawing Page(s)  
LN.CNT 705

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L8 ANSWER 8 OF 10 USPAT2 on STN

AB The present invention is a method for producing a single crystal of which a whole plane in a radial direction is a

defect-free region with pulling the single crystal from a raw material melt in a chamber by Czochralski method, wherein a pulling condition is changed in a direction of the crystal growth axis during pulling the single crystal so that a margin of a pulling rate is always a predetermined value or more that the single crystal of which the whole plane in a radial direction is a defect-free region can be pulled. Thereby, there can be provided a method for producing a single crystal in which when a single crystal is produced by CZ method, the single crystal of which a whole plane in a radial direction is a defect-free region entirely in a direction of the crystal growth axis can be produced with stability.

CAS INDEXING IS AVAILABLE FOR THIS PATENT

AN 2006:205843 USPAT2

TI Method for producing single crystal and single crystal

IN Mitamura, Nobuaki, Fukushima, JAPAN  
Ohta, Tomohiko, Gunma, JAPAN  
Fusegawa, Izumi, Fukushima, JAPAN  
Sakurada, Masahiro, Fukushima, JAPAN  
Ozaki, Atsushi, Fukushima, JAPAN

PA Shin-Etsu Handotai Co., Ltd., Tokyo, JAPAN (non-U.S. corporation)

PI US 7226507 B2 20070605

WO 2005001169 20050106

AI US 2004-561865 20040527 (10)

WO 2004-JP7252 20040527

20060220 PCT 371 date

PRAI JP 2003-184838 20030627

DT Utility

FS GRANTED

EXNAM Primary Examiner: Hiteshew, Felisa

LREP Oliff & Berridge PLC

CLMN Number of Claims: 9

ECL Exemplary Claim: 1

DRWN 12 Drawing Figure(s); 9 Drawing Page(s)

LN.CNT 995

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L8 ANSWER 9 OF 10 USPAT2 on STN

AB There are disclosed a silicon wafer for epitaxial growth wherein the wafer is produced by slicing a silicon single crystal grown with doping nitrogen according to the Czochralski method (CZ method) in the region where at least the center of the wafer becomes V region in which the void type defects are generated, and wherein the number of defects having an opening size of 20 nm or less among the void type defects appearing on the surface of the wafer is 0.02/cm.sup.2 or less, and an epitaxial wafer wherein an epitaxial layer is formed on the silicon wafer for epitaxial growth. Thereby, there can be produced an epitaxial wafer having a high gettering capability wherein very few SF exist in the epitaxial layer easily at high productivity and at low cost.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2005:243977 USPAT2

TI Silicon wafer for epitaxial growth, an epitaxial wafer, and a method for producing it

IN Hoshi, Ryoji, Fukushima, JAPAN  
Sonokawa, Susumu, Fukushima, JAPAN

PA Shin-Etsu Handotai Co., Ltd., Tokyo, JAPAN (non-U.S. corporation)

PI US 7204881 B2 20070417

WO 2001027362 20010419

AI US 2003-520099 20030708 (10)

WO 2003-JP8671 20030708  
20050104 PCT 371 date  
PRAI JP 2002-204703 20020712  
DT Utility  
FS GRANTED  
EXNAM Primary Examiner: Hiteshew, Felisa  
LREP Oliff & Berridge, PLC  
CLMN Number of Claims: 29  
ECL Exemplary Claim: 1  
DRWN 10 Drawing Figure(s); 6 Drawing Page(s)  
LN.CNT 845  
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L8 ANSWER 10 OF 10 USPAT2 on STN  
AB The present invention provides a silicon wafer sliced from a silicon single crystal ingot grown by the Czochralski method under such conditions that V-rich region should become dominant, wherein count number of particles having a size of 0.1  $\mu\text{m}$  or more is 1 count/cm.sup.2 or less when particles are counted by using a particle counter and a method for producing a silicon single crystal. Thus, there is provided a production technique that can improve productivity and reduce cost for high quality silicon wafers of excellent device characteristics by further reducing density and size of defects such as COP.

CAS INDEXING IS AVAILABLE FOR THIS PATENT

AN 2002:284777 USPAT2  
TI Silicon wafer and method for producing silicon single crystal  
IN Hoshi, Ryoji, Fukushima, JAPAN  
Fusegawa, Izumi, Fukushima, JAPAN  
Ohta, Tomohiko, Fukushima, JAPAN  
Maeda, Shigemaru, Fukushima, JAPAN  
PA Shin-Etsu Handotai Co., Ltd., Tokyo, JAPAN (non-U.S. corporation)  
PI US 6632411 B2 20031014  
WO 2001073169 20011004  
AI US 2001-979519 20011123 (9)  
WO 2001-JP2451 20010327  
PRAI JP 2000-92337 20000329  
DT Utility  
FS GRANTED  
EXNAM Primary Examiner: Hiteshew, Felisa  
CLMN Number of Claims: 20  
ECL Exemplary Claim: 1  
DRWN 7 Drawing Figure(s); 4 Drawing Page(s)  
LN.CNT 723  
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

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PALM INTRANET

Day : Tuesday  
 Date: 6/5/2007  
 Time: 14:29:34

**Inventor Name Search Result**

Your Search was:

Last Name = FUSEGAWA

First Name = IZUMI

Application#	Patent#	Status	Date Filed	Title	Inventor Name
<u>06941624</u>	Not Issued	161	12/11/1986	METHOD AND APPARATUS FOR CZOCHRALSKI SINGLE CRYSTAL GROWING	FUSEGAWA, IZUMI
<u>07242414</u>	4956153	250	09/09/1988	APPARATUS FOR CZOCHRALSKI SINGLE CRYSTAL GROWING	FUSEGAWA, IZUMI
<u>07496750</u>	5110404	150	03/21/1990	METHOD FOR HEAT PROCESSING OF SILICON	FUSEGAWA, IZUMI
<u>07703750</u>	Not Issued	166	05/21/1991	METHOD FOR PULLING UP SEMICONDUCTOR SINGLE CRYSTAL	FUSEGAWA, IZUMI
<u>07713848</u>	5306387	150	06/12/1991	METHOD FOR PULLING UP SEMICONDUCTOR SINGLE CRYSTAL	FUSEGAWA, IZUMI
<u>07729026</u>	Not Issued	161	07/12/1991	METHOD FOR PULLING SEMICONDUCTOR SINGLE CRYSTAL	FUSEGAWA, IZUMI
<u>07796385</u>	5688319	150	11/22/1991	METHOD FOR TESTING ELECTRICAL PROPERTIES OF SILICON SINGLE CRYSTAL	FUSEGAWA, IZUMI
<u>07850506</u>	5262338	250	03/13/1992	METHOD FOR FABRICATION OF SEMICONDUCTOR DEVICE	FUSEGAWA, IZUMI
<u>07850915</u>	Not Issued	166	03/13/1992	HEAT TREATMENT OF SI SINGLE CRYSTAL	FUSEGAWA, IZUMI
<u>07850916</u>	5386796	150	03/13/1992	METHOD FOR TESTING QUALITY OF SILICON WAFER	FUSEGAWA, IZUMI
<u>07852612</u>	5248378	150	03/17/1992	METHOD AND APPARATUS FOR PRODUCING SILICON SINGLE CRYSTAL	FUSEGAWA, IZUMI
<u>07953918</u>	5359959	250	09/30/1992	METHOD FOR PULLING UP	FUSEGAWA, IZUMI



				SEMI-CONDUCTOR SINGLE CRYSTAL	
<u>07961182</u>	<u>5462010</u>	250	10/14/1992	APPARATUS FOR SUPPLYING GRANULAR RAW MATERIAL FOR A SEMICONDUCTOR SINGLE CRYSTAL PULLING APPARATUS	FUSEGAWA, IZUMI
<u>07961764</u>	<u>5373805</u>	250	10/15/1992	SINGLE CRYSTAL PULLING APPARATUS	FUSEGAWA, IZUMI
<u>08011744</u>	<u>5340434</u>	250	02/01/1993	PROCESS FOR PRODUCING SILICON SINGLE CRYSTAL	FUSEGAWA, IZUMI
<u>08012172</u>	<u>5361721</u>	250	02/02/1993	SINGLE CRYSTAL PULLING APPARATUS	FUSEGAWA, IZUMI
<u>08108285</u>	Not Issued	166	08/19/1993	HEAT TREATMENT OF SI SINGLE CRYSTAL	FUSEGAWA, IZUMI
<u>08190604</u>	Not Issued	166	02/02/1994	CRUCIBLE FOR PULLING SILICON SINGLE CRYSTAL	FUSEGAWA, IZUMI
<u>08238722</u>	<u>5534112</u>	150	05/05/1994	METHOD FOR TESTING ELECTRICAL PROPERTIES OF SILICON SINGLE CRYSTAL	FUSEGAWA, IZUMI
<u>08293214</u>	Not Issued	166	08/19/1994	APPARATUS FOR PRODUCING SILICON SINGLE CRYSTAL GROWN BY CZOCHRALSKI METHOD	FUSEGAWA, IZUMI
<u>08395837</u>	<u>5501172</u>	150	02/28/1995	METHOD OF GROWING SILICON SINGLE CRYSTALS	FUSEGAWA, IZUMI
<u>08445029</u>	Not Issued	166	05/19/1995	HEAT TREATMENT OF SI SINGLE CRYSTAL	FUSEGAWA, IZUMI
<u>08510436</u>	<u>5720809</u>	250	08/02/1995	CRUCIBLE FOR PULLING SILICON SINGLE CRYSTAL	FUSEGAWA, IZUMI
<u>08552164</u>	Not Issued	166	11/02/1995	APPARATUS FOR PRODUCING SILICON SINGLE CRYSTAL GROWN BY CZOCHRALSKI METHOD	FUSEGAWA, IZUMI
<u>08699719</u>	<u>5725661</u>	250	07/01/1996	EQUIPMENT FOR PRODUCING SILICON SINGLE CRYSTALS	FUSEGAWA, IZUMI
<u>08754784</u>	<u>5938841</u>	150	11/21/1996	DEVICE FOR PRODUCING SINGLE CRYSTAL	FUSEGAWA, IZUMI
<u>08760959</u>	<u>5766346</u>	150	12/05/1996	APPARATUS FOR PRODUCING SILICON SINGLE CRYSTAL	FUSEGAWA, IZUMI
<u>08770499</u>	<u>5851283</u>	150	12/20/1996	METHOD AND APPARATUS	FUSEGAWA, IZUMI

				FOR PRODUCTION OF SINGLE CRYSTAL	
<u>08773351</u>	<u>5871583</u>	150	12/26/1996	AN APPARATUS FOR PRODUCING SILICON CRYSTAL	FUSEGAWA, IZUMI
<u>08916291</u>	<u>5834322</u>	250	08/22/1997	HEAT TREATMENT OF SI SINGLE CRYSTAL	FUSEGAWA, IZUMI
<u>09270277</u>	<u>6153009</u>	150	03/16/1999	METHOD FOR PRODUCING A SILICON SINGLE CRYSTAL AND THE SILICON SINGLE CRYSTAL PRODUCED THEREBY	FUSEGAWA, IZUMI
<u>09290261</u>	<u>6117231</u>	150	04/13/1999	METHOD OF MANUFACTURING SEMICONDUCTOR SILICON SINGLE CRYSTAL WAFER	FUSEGAWA, IZUMI
<u>09429343</u>	<u>6387466</u>	150	10/28/1999	SINGLE-CRYSTAL SILICON WAFER	FUSEGAWA, IZUMI
<u>09646713</u>	<u>6565822</u>	150	09/21/2000	EPITAXIAL SILICON WAFER, METHOD FOR PRODUCING THE SAME AND SUBTRATE FOR EPITAXIAL SILICON WAFER	FUSEGAWA, IZUMI
<u>09673480</u>	Not Issued	161	10/16/2000	Method for producing silicon single crystals	FUSEGAWA, IZUMI
<u>09674858</u>	<u>6423285</u>	150	11/07/2000	Method for producing silicon single crystal and production apparatus therefor as well as crystal and silicon wafer produced by the method	FUSEGAWA, IZUMI
<u>09937132</u>	<u>6632280</u>	150	09/21/2001	SINGLE CRYSTAL GROWING DEVICE	FUSEGAWA, IZUMI
<u>09959381</u>	<u>6592662</u>	150	10/24/2001	METHOD FOR PREPARING SILICON SINGLE CRYSTAL AND SILICON SINGLE CRYSTAL	FUSEGAWA, IZUMI
<u>09979519</u>	<u>6632411</u>	150	11/23/2001	SILICON WAFER AND METHOD FOR PRODUCING SILICON SINGLE CRYSTAL	FUSEGAWA, IZUMI
<u>10204278</u>	<u>6764548</u>	150	08/20/2002	APPARATUS AND METHOD FOR PRODUCING SILICON SEMICONDUCTOR SINGLE CRYSTAL	FUSEGAWA, IZUMI
<u>10204935</u>	<u>6913646</u>	150	08/27/2002	SILICON SINGLE CRYSTAL WAFER AND METHOD FOR PRODUCING SILICON	FUSEGAWA, IZUMI

				SINGLE CRYSTAL	
<u>10312921</u>	<u>6893499</u>	150	12/26/2002	SILICON SINGLE CRYSTAL WAFER AND METHOD FOR MANUFACTURING THE SAME	FUSEGAWA, IZUMI
<u>10500580</u>	<u>7129123</u>	150	07/01/2004	AN SOI WAFER AND A METHOD FOR PRODUCING AN SOI WAFER	FUSEGAWA, IZUMI
<u>10510695</u>	<u>7179330</u>	150	10/08/2004	METHOD OF MANUFACTURING SILICON SINGLE CRYSTAL, SILICON SINGLE CRYSTAL AND SILICON WAFER	FUSEGAWA, IZUMI
<u>10512470</u>	Not Issued	90	10/26/2004	A SILICON SINGLE CRYSTAL WAFER, AN EPITAXIAL WAFER AND A METHOD FOR PRODUCING A SILICON SINGLE CRYSTAL	FUSEGAWA, IZUMI
<u>10516347</u>	Not Issued	94	11/30/2004	GRAPHITE HEATER FOR PRODUCING SINGLE CRYSTAL, APPARATUS FOR PRODUCING SINGLE CRYSTAL, AND METHOD FOR PRODUCING SINGLE CRYSTAL	FUSEGAWA, IZUMI
<u>10538878</u>	<u>7214268</u>	150	06/14/2005	METHOD OF PRODUCING P- DOPED SILICON SINGLE CRYSTAL AND P-DOPED N- TYPE SILICON SINGLE CRYSTAL WAFER	FUSEGAWA, IZUMI
<u>10542376</u>	Not Issued	30	07/14/2005	AN SOI WAFER AND A METHOD FOR PRODUCING THE SAME	FUSEGAWA, IZUMI
<u>10561865</u>	<u>7226507</u>	150	02/20/2006	METHOD FOR PRODUCING SINGLE CRYSTAL AND SINGLE CRYSTAL	FUSEGAWA, IZUMI
<u>10568186</u>	Not Issued <i>Applicants' Invention</i>	30	03/03/2006	Method for producing a single crystal and silicon single crystal wafer	FUSEGAWA, IZUMI

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## Inventor Name Search Result

Your Search was:

Last Name = MITAMURA

First Name = NOBUAKI

Application#	Patent#	Status	Date Filed	Title	Inventor Name
<a href="#">07557574</a>	<a href="#">5030017</a>	150	07/24/1990	ROLLING BEARING	MITAMURA, NOBUAKI
<a href="#">07560445</a>	<a href="#">5084116</a>	150	07/31/1990	ROLLING CONTACT ELEMENT STEEL AND ROLLING BEARING MADE THEREOF	MITAMURA, NOBUAKI
<a href="#">07572480</a>	<a href="#">5085733</a>	150	08/23/1990	ROLLING CONTACT PARTS STEEL AND ROLLING BEARING MADE THEREOF	MITAMURA, NOBUAKI
<a href="#">07915503</a>	Not Issued	161	07/20/1992	BALL AND ROLLER BEARING	MITAMURA, NOBUAKI
<a href="#">07946638</a>	<a href="#">5338377</a>	150	09/18/1992	BALL-AND-ROLLER BEARING	MITAMURA, NOBUAKI
<a href="#">08134588</a>	<a href="#">5427457</a>	150	10/12/1993	ROLLING BEARING	MITAMURA, NOBUAKI
<a href="#">08242668</a>	<a href="#">5413643</a>	150	05/13/1994	ROLLING BEARING	MITAMURA, NOBUAKI
<a href="#">08374179</a>	Not Issued	166	01/18/1995	TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION	MITAMURA, NOBUAKI
<a href="#">08512419</a>	<a href="#">5660647</a>	150	08/08/1995	ROLLING BEARING WITH IMPROVED WEAR RESISTANCE	MITAMURA, NOBUAKI
<a href="#">08519643</a>	<a href="#">5626974</a>	150	08/25/1995	ROLLING BEARING FOR USE UNDER HIGH TEMPERATURE CONDITIONS	MITAMURA, NOBUAKI
<a href="#">08536773</a>	<a href="#">5672014</a>	150	09/29/1995	ROLLING BEARINGS	MITAMURA, NOBUAKI
<a href="#">08542828</a>	<a href="#">5853660</a>	150	10/13/1995	A ROLLING BEARING MADE OF IMPROVED BEARING STEEL	MITAMURA, NOBUAKI
<a href="#">08683195</a>	<a href="#">5958155</a>	150	07/18/1996	PROCESS FOR PRODUCING THIN FILM	MITAMURA, NOBUAKI

<u>08745635</u>	<u>5855531</u>	150	11/08/1996	COMPONENT PARTS OF A TOROIDAL-TYPE CONTINUOUSLY VARIABLE TRANSMISSION HAVING IMPROVED LIFE	MITAMURA, NOBUAKI
<u>08763883</u>	<u>5887015</u>	150	12/11/1996	HEATER MECHANISM FOR CRYSTAL PULLING APPARATUS	MITAMURA, NOBUAKI
<u>08877950</u>	<u>5989694</u>	150	06/17/1997	ROLLING BEARING	MITAMURA, NOBUAKI
<u>08955294</u>	Not Issued	164	10/21/1997	ROLLING BEARING MADE OF IMPROVED BEARING STEEL	MITAMURA, NOBUAKI
<u>09098980</u>	<u>6171414</u>	150	06/17/1998	ROLLING BEARING	MITAMURA, NOBUAKI
<u>09108174</u>	<u>6174257</u>	150	07/01/1998	TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION	MITAMURA, NOBUAKI
<u>09181911</u>	<u>6174258</u>	150	10/29/1998	TOROIDAL-TYPE CONTINUOUSLY VARIABLE TRANSMISSION	MITAMURA, NOBUAKI
<u>09183630</u>	<u>6066068</u>	150	10/30/1998	TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION	MITAMURA, NOBUAKI
<u>09187607</u>	<u>6165100</u>	150	11/06/1998	HIGH-CLEANNESS STEEL AND TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION INCLUDING COMPONENTS SUCH AS INPUT/OUTPUT DISCS, POWER ROLLER AND CAM DISC USING THE HIGH-CLEANNESS STEEL	MITAMURA, NOBUAKI
<u>09226032</u>	<u>6174085</u>	150	01/05/1999	LINEAR/GUIDE BEARING DEVICE	MITAMURA, NOBUAKI
<u>09235052</u>	<u>6196946</u>	150	01/21/1999	POWER ROLLER BEARING OF TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION AND METHOD OF MANUFACTURING POWER ROLLER BEARING OF TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION	MITAMURA, NOBUAKI
<u>09245931</u>	Not	161	02/08/1999	TEMPERATURE-	MITAMURA,

	Issued			INDEPENDENT OPTICAL ELEMENT	NOBUAKI
<u>09272731</u>	<u>6210542</u>	150	11/04/1998	PROCESS FOR PRODUCING THIN FILM, THIN FILM AND OPTICAL INSTRUMENT INCLUDING THE SAME	MITAMURA, NOBUAKI
<u>09339238</u>	<u>6332714</u>	150	06/24/1999	INDUCTION-HARDENED ROLLING BEARING DEVICE	MITAMURA, NOBUAKI
<u>09344380</u>	<u>6328669</u>	150	06/25/1999	TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION	MITAMURA, NOBUAKI
<u>09349204</u>	<u>6176806</u>	150	07/07/1999	CAM DISK FOR TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION	MITAMURA, NOBUAKI
<u>09358554</u>	<u>6478894</u>	150	07/22/1999	ROLLING BEARING	MITAMURA, NOBUAKI
<u>09379748</u>	<u>6152605</u>	150	08/24/1999	BALL BEARING	MITAMURA, NOBUAKI
<u>09401917</u>	<u>6358440</u>	150	09/23/1999	PROCESS FOR PRODUCING THIN FILM, THIN FILM AND OPTICAL INSTRUMENT INCLUDING THE SAME	MITAMURA, NOBUAKI
<u>09697179</u>	<u>6829053</u>	150	10/27/2000	AIRGAP TYPE ETALON AND APPARATUS UTILIZING THE SAME	MITAMURA, NOBUAKI
<u>09886122</u>	<u>6413188</u>	150	06/22/2001	TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION	MITAMURA, NOBUAKI
<u>09939566</u>	<u>6646805</u>	150	08/28/2001	APPARATUS FOR VARIABLE WAVELENGTH DISPERSION AND WAVELENGTH DISPERSION SLOPE	MITAMURA, NOBUAKI
<u>09957413</u>	<u>6426022</u>	150	09/20/2001	PROCESS FOR PRODUCING THIN FILM, THIN FILM AND OPTICAL INSTRUMENT INCLUDING THE SAME	MITAMURA, NOBUAKI
<u>09984396</u>	<u>6807335</u>	150	10/30/2001	WAVELENGTH CHARACTERISTIC VARIABLE APPARATUS	MITAMURA, NOBUAKI
<u>10061307</u>	<u>6826318</u>	150	02/04/2002	VARIABLE POLARIZATION PLANE ROTATOR AND OPTICAL DEVICE USING SAME	MITAMURA, NOBUAKI
<u>10164438</u>	<u>6900940</u>	150	06/10/2002	OPTICAL APPARATUS AND DEVICE	MITAMURA, NOBUAKI

<u>10278868</u>	<u>7200297</u>	150	10/24/2002	DEVICE USING A VIRTUALLY-IMAGED PHASED ARRAY (VIPA) WITH AN IMPROVED TRANSMISSION WAVE CHARACTERISTIC OF OUTPUT LIGHT	MITAMURA, NOBUAKI
<u>10286779</u>	<u>6862126</u>	150	11/04/2002	TRANSMISSION WAVELENGTH CHARACTERISTICS VARIABLE OPTICAL ELEMENT, AND WAVELENGTH CHARACTERISTICS VARIABLE APPARATUS, OPTICAL AMPLIFIER, OPTICAL TRANSMISSION SYSTEM, AND CONTROL METHOD OF TRANSMISSION WAVELENGTH CHARACTERISTICS, USING SAME	MITAMURA, NOBUAKI
<u>10310900</u>	<u>7137741</u>	150	12/06/2002	ROLLING BEARING	MITAMURA, NOBUAKI
<u>10340842</u>	<u>6909537</u>	150	01/13/2003	DISPERSION COMPENSATOR WHOSE TRANSMISSION BAND IS FLATTENED	MITAMURA, NOBUAKI
<u>10341380</u>	<u>6807008</u>	150	01/14/2003	WAVELENGTH DISPERSION GENERATION APPARATUS, MULTI-FACED MIRROR USED FOR WAVELENGTH DISPERSION GENERATION APPARATUS, AND METHOD FOR MANUFACTURING THEREOF	MITAMURA, NOBUAKI
<u>10351376</u>	<u>7016096</u>	150	01/27/2003	TRANSMISSION WAVELENGTH CHARACTERISTICS VARIABLE OPTICAL ELEMENT, AND WAVELENGTH CHARACTERISTICS VARIABLE APPARATUS, OPTICAL AMPLIFIER, AND OPTICAL TRANSMISSION SYSTEM, USING SAME	MITAMURA, NOBUAKI
<u>10410342</u>	<u>7037386</u>	150	04/10/2003	ROLLING BEARING FOR CONTINUOUSLY VARIABLE	MITAMURA, NOBUAKI

				TRANSMISSION	
<a href="#">10414308</a>	<a href="#">6923576</a>	150	04/16/2003	ROLLING BEARING AND BELT CONTINUOUSLY VARIABLE TRANSMISSION	MITAMURA, NOBUAKI
<a href="#">10500580</a>	<a href="#">7129123</a>	150	07/01/2004	AN SOI WAFER AND A METHOD FOR PRODUCING AN SOI WAFER	MITAMURA, NOBUAKI
<a href="#">10510695</a>	<a href="#">7179330</a>	150	10/08/2004	METHOD OF MANUFACTURING SILICON SINGLE CRYSTAL, SILICON SINGLE CRYSTAL AND SILICON WAFER	MITAMURA, NOBUAKI
<a href="#">10512470</a>	Not Issued	90	10/26/2004	A SILICON SINGLE CRYSTAL WAFER, AN EPITAXIAL WAFER AND A METHOD FOR PRODUCING A SILICON SINGLE CRYSTAL	MITAMURA, NOBUAKI

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 PALM INTRANETDay : Tuesday  
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Your Search was:

Last Name = YANAGIMACHI

First Name = TAKAHIRO

Application#	Patent#	Status	Date Filed	Title	Inventor Name
<u>08759223</u>	<u>5888298</u>	150	12/05/1996	MEMBER-HANDLING MECHANISM, AND MEMBER-HANDLING JIG FOR A CRYSTAL PULLING APPARATUS	YANAGIMACHI, TAKAHIRO
<u>10204278</u>	<u>6764548</u>	150	08/20/2002	APPARATUS AND METHOD FOR PRODUCING SILICON SEMICONDUCTOR SINGLE CRYSTAL	YANAGIMACHI, TAKAHIRO
<u>*10568180</u>	Not Issued	30	03/03/2006	Method for producing a single crystal and silicon single crystal wafer	YANAGIMACHI, TAKAHIRO

*Applicants' Invention*

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